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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,439	08/24/2001	Robin Levonas	060705-1830	2762

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EXAMINER

PHAM, TUAN

ART UNIT	PAPER NUMBER
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2643

DATE MAILED: 11/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/939,439	Applicant(s) LEVONAS ET AL.	
	Examiner TUAN A. PHAM	Art Unit 2643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,3 and 5-10 is/are allowed.
- 6) ☒ Claim(s) 17-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see Applicant's remark, filed on 08/24/2005, with respect to the rejection(s) of claim(s) 1-20 under 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made over Koyama et al. (U.S. Patent No.: 5,388,092), Walker et al. (U.S. Patent No.: 5,467,394), and Bao et al. (U.S. Patent No.: 6,526,093).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of

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35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. **Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koyama et al. (U.S. Patent No.: 5,388,092, hereinafter, "Koyama") in view of Chen (U.S. Patent No.: 6,256,383), Walker et al. (U.S. Patent No.: 5,467,394, hereinafter, "Walker"), and further in view of Bao et al. (U.S. Patent No.: 6,526,093, hereinafter, "Bao").**

Regarding claim 17, Koyama teaches a digital signal transceiver, comprising:

a transmitter configured to receive a locally generated transmit signal (see figure 1, transmitter 14, col.3, ln.35-65);

a hybrid electrically coupled to the transmitter configured to receive and inductively couple the transmit signal to a two-wire transmission line (see figure 1, hybrid 16, transmitter 14, two wire transmission line 3, col.3, ln.35-65), the hybrid further configured to receive a remotely generated receive signal along the two-wire transmission line (see figure 1, two wire transmission line 3, col.3, ln.35-65);

a receiver configured to process the remotely generated receive signal (see figure 1, receiver 15 receive the signal remotely from the network side 2); and

an echo canceller disposed in parallel between the transmitter and the receiver configured to reduce the echo signal (see figure 1, transmitter 14, receiver 15, echo canceller 10, col.3, ln.35-65).

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It should be noticed that Koyama fails to teach a long tail echo. However, Chen teaches such features (see figure 1, FIR filter, col.3, ln.10-32, col.7, ln.5-50).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Chen into view of Koyama in order to improve the echo signal in the communication system.

Koyama and Chen, in combination, fails to teach a short-term echo. However, Walker teaches such feature (see col.2, ln.30-39).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Walker into view of Koyama and Chen in order to improve the echo signal in the communication system.

Koyama, Chen, and Walker, in combination, fails to teach the echo canceller calculates coefficient values for less than N taps while emulating an N tap digital filter. However, Bao teaches such features (see col.7-8, ln.25-57).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Bao into view of Koyama, Chen, and Walker in order to improve the echo signal in the communication system.

Regarding claim 18, Chen further teaches the transceiver wherein the echo canceller comprises a bifurcated digital filter that adaptively calculates and applies tap coefficients to each of a plurality of filter taps in a first stage and adaptively calculates and applies a subset of tap coefficient values to a plurality

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of filter taps in a second stage (see figure 1, FIR filter 32, IIR filter 40, col.7, ln.15-67).

Regarding claim 19, Chen further teaches the transceiver wherein the digital filter adaptively calculates a tap coefficient value for a first tap of the second stage and every k th tap thereafter (see col.7, ln.3-50).

Regarding claim 20, Chen further teaches the transceiver wherein the digital filter interpolates the calculated tap coefficient values for the second stage to identify coefficient values to apply at taps disposed between taps associated with a calculated tap coefficient (see col.2, ln.28-35, col.7, ln.3-50).

Allowable Subject Matter

4. Claims 1, 3, 5-10 are allowed.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In order to expedite the prosecution of this application, the applicants are also requested to consider the following references. Although Koike (U.S. Patent No. 5,084,865), Chu (U.S. Patent No. 6,687,235), Agazzi et al. (U.S. Pub. No. 2005/0084002), and Mehrabanzad et al. (U.S. Patent. No. 6,408,021) are not applied into this Office Action; they are also called to Applicants attention. They may be used in future Office Action(s).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Tuan A. Pham** whose telephone number is

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(571) 272-8097. The examiner can normally be reached on Monday through Friday, 8:00 AM-5:00 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Curtis Kuntz can be reached on (571) 272-7499 and

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November 7, 2005
Examiner

Tuan Pham


CURTIS KUNTZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600